

Notice of Allowability

Application No.

09/892,924

Examiner

Kimbinh T. Nguyen

Applicant(s)

SLOAN ET AL.

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 10/07/04.
2. ☒ The allowed claim(s) is/are 24,25,27,29,30 and 42-46.
3. ☒ The drawings filed on 26 June 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 11/23/04.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. This action is responsive to amendment filed 10/07/04.
2. Claims 24, 25, 27, 29, 30 and 42-46 are pending in the application.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David Thompson on 23/11/2004.

The application has been amended as follows:

Claim 27, The method as defined in Claim ~~[[26]]~~ 24, wherein: the set of texture maps comprises two texture maps; and each said texture map: corresponds to not more ~~[[that]]~~ than four of the radial directions; and has four color channels each having not more than radial direction encoding for the corresponding largest angle for each vertex between the normal vector and any direct ray of light to the vertex that does not contact any of the bumps on the surface.

Claim 44, The one or more media as recited in claim 42, wherein: the set of texture maps comprises two texture maps; and each said texture map: corresponds to not more ~~[[that]]~~ than four of the radial directions; and has four color channels each having not more than radial direction encoding for the corresponding largest angle for each vertex between the normal vector and any direct ray of light to the vertex that does

not contact any of the bumps on the surface.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance:

Claims 24 and 42, the prior art does not teach a method for determining shadowing cast onto a bump mapped surface, comprising: defining a horizon map of the surface including for radial directions, the largest angle between the normal vector and any direct ray of light to the vertex; wherein for each vertex, each texture map has color channels, each color channel having encoded therein the largest angle between the normal vector and any direct ray of light to the vertex that does not contact any of the bump maps on the surface.

Claims 29 and 45, the prior art does not teach the perturbed normal vector value at the vertex to obtain cosine; setting a color mask upon the frame buffer, wherein the color mask will not write to the color channels of the texture maps, whereby the ambient low level lighting term previously rendered is preserved; computing the first and second texture effects on each pixel in the frame buffer by a basis map $B_1(s,t)$ of the M basis maps ($B_k=1...M(s,t)$), and a horizon map, $\phi_1(u,v)$ of the horizon maps; and a basis map $B_2(s,t)$ of the M basis maps ($B_k=1...M(s,t)$), and a horizon map, $\phi_2(u,v)$ of the horizon maps.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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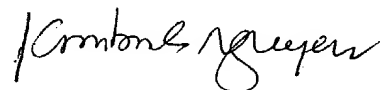
accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimbinh T. Nguyen whose telephone number is (703) 305-9683. The examiner can normally be reached on Monday to Thursday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Friday from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 29, 2004



Kimbinh Nguyen

Patent Examiner AU 2671